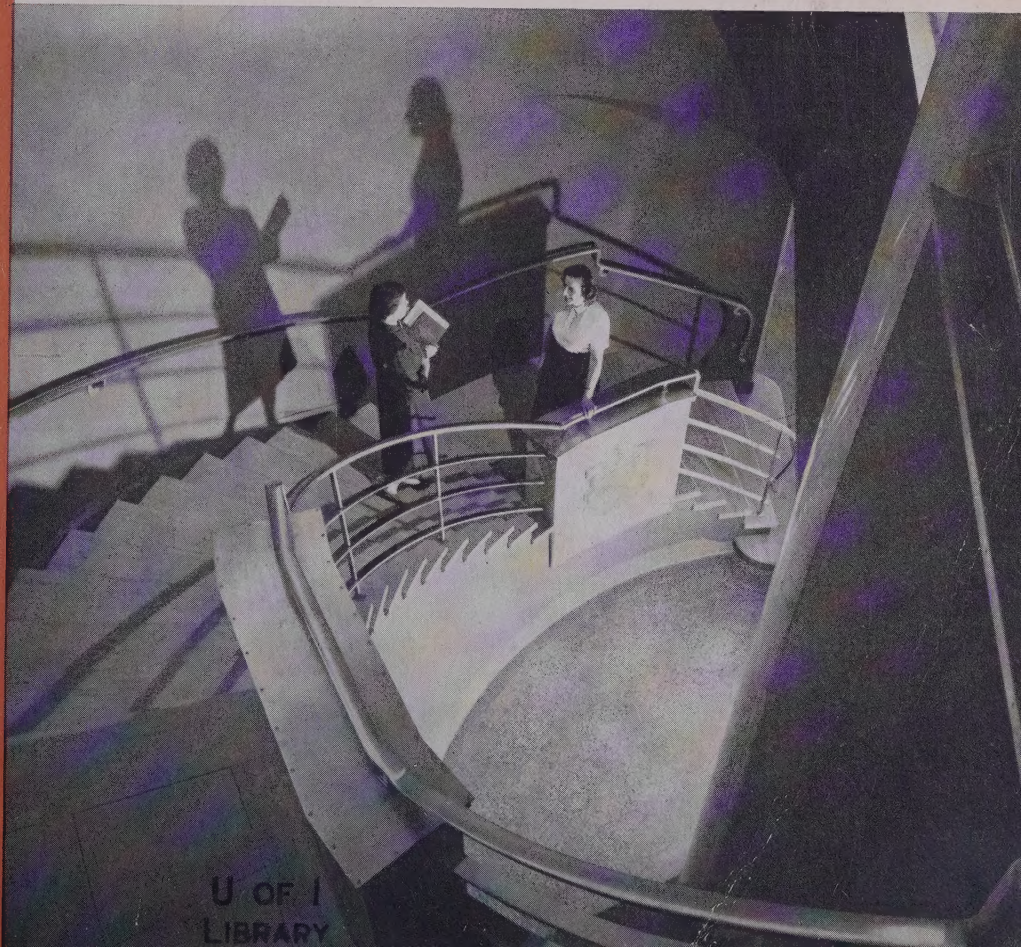
JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANAD



OL. 32
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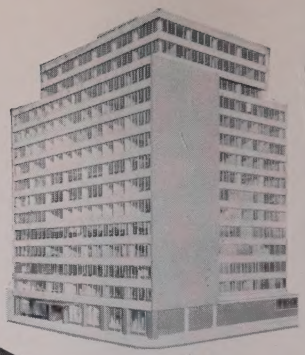
No. 1

in architecture

This is the Trend



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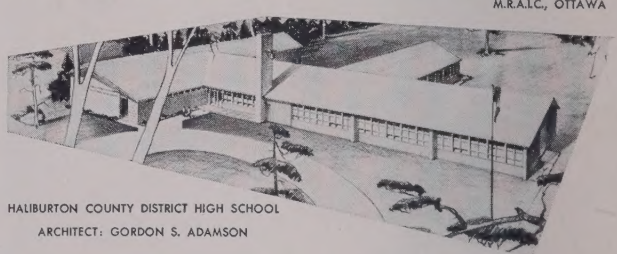

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RAIC JOURNAL

Serial No 353, Vol. 32, No 1

COVER

Central Stairway, Building Research Centre, Ottawa
Architect, J. C. Meadowcroft
Photograph by the National Film Board

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

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EDITORIAL AND ADVERTISING OFFICES, 57 QUEEN STREET WEST, TORONTO 1

EDITORIAL

THE PRIME MINISTER in his New Year's message states that Canada is blessed with almost unparalleled material well-being which justifies our optimism about the future.

The future success and well-being of the Royal Architectural Institute of Canada will depend greatly upon the degree of preparation of the individual members of the Institute to cope with the complexities of the practice of the profession which are on the increase year by year.

Not only must the Institute members keep abreast of the times, but the membership as a whole must concentrate upon the establishment of a wider, yet in some respects, a more intensive training of those about to enter the profession.

In addition, more facilities must be offered to our young members to extend their knowledge, and to become more capable in the field of architectural practice.

Having enjoyed the benefits of material success, and being reasonably optimistic of the future, should we not individually and collectively, as we enter the new year, resolve that we shall give more freely of our talents, our experience, and our time, in a whole-hearted endeavour to improve and augment our educational facilities?

The Commission for the Survey of Education and Registration of the Department of Education and Research of the American Institute of Architects has published recently, in two volumes, a comprehensive survey of the practice of architecture and of architectural education in the United States of America under the title "The Architect at Mid-Century". As a source of information upon these subjects the Survey is unequalled. The opinions expressed therein of groups of architects across the continent upon the position the architect should be prepared to occupy in the social pattern of the community are worthy of note, and the list of technical activities, fields of knowledge, abilities in respect to business operations, and powers of direction and leadership in which the architect must excel should be examined thoughtfully by everyone.

It is opportune to note at this time that the Survey indicates that membership in the profession of architecture adds to all of these capabilities and attainments, wider responsibilities to society itself, in conserving and extending the resources the architect has enjoyed, and in maintaining and raising the standards of performance of his group. It is pointed out that the architect should therefore be prepared to accept the following responsibilities:

> To develop himself and his profession to maximum usefulness.
>
> To improve his own competence and that of his profession by increasing and sharing architectural knowledge.
>
> To ensure the future of his profession through active participation in the recruiting and training of an adequate number of high-quality candidates.

To implement the efforts of the Council in improving and augmenting our activities in the field of architectural education and practice the aid of members as individuals and as component associations is needed. The forthcoming Special Meeting of Council to be held in Toronto on February 25th-26th, 1955, may be an appropriate occasion for a preliminary discussion on this subject.

To all members of the Royal Institute the Council extends best wishes for a happy and successful year.

A. J. C. Paine, *President*

Building Research Centre, Ottawa

R. F. Legget and H. B. Dickens

Cast aluminum coat of arms
Sculptress, Helen Robertson

A BUILDING RESEARCH CENTRE for Canada in Ottawa was officially dedicated on October 23, 1953, by the Rt. Hon. C. D. Howe, Chairman of the Privy Council Committee on Scientific and Industrial Research. The building is to house the Division of Building Research of the National Research Council which was established in 1947 for the purpose of providing a building research service for Canada. Since the building is believed to be the first ever erected to serve the general needs of building research in a country such as Canada, and in view of the sympathetic interest which has been taken in the development of the Division by the architects of Canada, a description of the basic planning of this unique building is here presented.

Some notes are added with regard to the construction of the building since it has been suggested that certain features of the construction management are worthy of such publicity. Accompanying floor plans show the general arrangement of the building and the careful integration of offices and laboratories which will not, therefore, be described herein. The appearance of the exterior of the building and some parts of its interior, are shown in accompanying illustrations. These portray better than words the achievement of the architect in his approach to this unusual assignment.

The aims and objectives of the Division and the first stages of its work have been described in two papers published in the *Journal*.[1, 2] Suffice it to say here that the Division is concentrating on those building problems which are peculiar to Canada in the building field, with housing of paramount importance. Special cold room testing facilities for the Division were therefore an early and obvious need. Correspondingly, because of the work done within the Division on the National Building Code of Canada and for the Canadian Government Specifications Board, much more office space is required than is usual for an active research organization.

For the first years of its existence the Division was accommodated in various buildings of the Division of Mechanical Engineering of the National Research Council at the Montreal Road Laboratories of the Council. There was available no temporary accommodation which could be used, as had been hoped, in order to give some years for the development of the Division before the planning of a building for its special use became necessary. The force of circumstances therefore dictated the essential need for a new building. Approval for this was fortunately obtained and basic planning was started in 1949. By the time the move into the new building was made in the summer of 1952, the Ottawa activities of the Division were being carried out in ten separate buildings, with what difficulty can best be imagined.

Preliminary Planning

When planning started, the Division was only just formulating the main lines of its development. The designing of a new building therefore required unusual care, particularly in view of the increasing demands being made upon the Division and the constantly widening scope of its activities. The general location of the building was deter-

[1] Building Research in Canada. RAIC *Journal*. April, 1948.
[2] Building Research, 1950. RAIC *Journal*. August, 1950.

mined by the availability of the Montreal Road site of the NRC. Most of the existing buildings on this site had been designed to serve one function only. The first major question to be decided was whether building research should be carried out in several small buildings or one large building designed to serve most of its needs. Although the decision was readily reached that one general building should be planned, it became quite clear that this question is in itself a research problem which it is hoped one day to investigate for general application. A leading factor in reaching this decision was the clear necessity, from the start of the work of the Division, for the integration of its widely varied functions in the interests of building practice as a whole.

Through contact with every other existing building research organization throughout the world, it was determined that there was not available any other building which could be used as a model for the Canadian Building Research Centre. Planning, therefore, had to start from first principles. Because of the existence of a central power house and tunnel system on the Montreal Road site, there was no need to contemplate the inclusion of special steam plant facilities. Similarly a central cafeteria and a large central workshop were available, eliminating the need for consideration of these service areas in planning the new building, and to this extent simplifying the design problem.

Some flexibility was possible with regard to the actual location for the building on the Montreal Road site. The site finally chosen was adjacent to the main road on the west side of the property. This gave a clear area of approximately four acres immediately behind the building site for outside experimental building research work. It also proved possible, with this site, so to locate the building that it constitutes a part of the security fence surrounding the Council property. Access to the new building would therefore be possible through its own main door during working hours and through the control guardhouse at all other times.

Because of this location and also because of the concurrent erection of a building to serve the Division of Radio and Electrical Engineering on the south side of the main road, it was necessary to replan and reconstruct the adjacent part of the Montreal Road, including the building of a semi-cloverleaf arrangement to separate NRC traffic from that on the main highway. The association of this engineering work with the construction of the new Building Research Centre enabled other necessary changes to be made, including the construction of a new entrance guardhouse and the provision of parking facilities.

Basic Layout

Some of the considerations basic to the initial layout studies stemmed from the fact that the building had to provide a large amount of efficient office space as well as special research laboratories. It was considered most desirable to plan the building so that the integration of office work and experimental work would be obvious to all who used the building for any purpose. Housing is of paramount importance in the work of the Division. The main laboratory space had therefore to be large enough to accommodate an average house for experimental purposes. In view of the character of research work, it was essential that the planning of the building should be as flexible as possible. This called for a minimum of small offices, a feature regarded as desirable for other and equally important reasons. Since the ultimate development of the Division could not be foreseen, it was essential in the early planning to allow for possible extensions of the new building without interference with normal operations. Finally, it was realized even at the time of planning that close integration of the various sections of the work of the Division, even as then seen, was most desirable.

With these basic requirements to start from, planning was commenced by diagrammatic study of the inter-relation of the research functions of the different sections of the Division. This early work was done by E. W. Glenesk, a young architectural graduate of the University of Manitoba then on the staff of the Division. Both he and the senior author developed rough floor plans of a building which appeared to meet the needs above set forth. It was surprising to find that approaches to this problem from the engineering and architectural sides led to almost identical but quite independent plans.

These were further developed into an agreed floor arrangement and it was this which was presented to the architect. Not only did the appointed architect have to use the skeleton thus provided, after further careful study by his own staff, but he had to ensure that the external appearance of the building conformed generally with that of other buildings on the Montreal Road site and yet differed sufficiently from them to indicate the special character of the Building Research Centre. Although the design assignment was somewhat unusual, the architect had previously planned other large laboratory buildings and so was not too disturbed by this necessary restriction upon his freedom of choice.

Description of Building

Founded throughout on solid rock, the building consists of a reinforced concrete basement with two upper floors of structural steel framing and terra cotta tile outside walls finished with pneumatically applied stucco on metal lath. A small penthouse is integral with the steel frame and is the only projection above the flat roof, most of which is of bonded tar and gravel construction but with one part tiled for outdoor experimental work.

In the interior asphalt tile and linoleum tile are used on the floors of the corridors and offices respectively. The basement floor is of concrete throughout with metallic particles embedded in the topping giving added resistance to abrasion. The basement partitions are built of lightweight concrete block with paint applied directly to the block for decoration. Above grade, flexibility is obtained by the use of removable type steel and glass partitions for much of the space separation with a few permanent partitions of plaster on terra cotta tile. Control of sound has been effected by the extensive use of acoustic tile on the suspended ceilings.

The plan is basically that of a large T, the top being

the front and office part of the building, the stem being the main open laboratory space. Smaller laboratory facilities are provided on the three floors of a wing at the rear of the building. This wing and the main laboratory are so arranged that, if and when necessary, they can be extended without difficulty and without interference with normal operations. A parking area is provided by the plan, with direct access from the rear main stairway. Access from the outside to the main laboratory floor is provided by a depressed roadway at the rear of the building. Heavy loads can thus be brought inside for unloading by the 10-ton crane.

Steam and other services to the building are provided from the power house of the Montreal Road Laboratories. A new tunnel connection had therefore to be provided and advantage was taken of the opportunity to build one part of this structure as a dual tunnel, one part for use as a new air-conditioned Metrology Laboratory for the Division of Physics. Access to these two tunnels is convenient to the general laboratory area and by direct stairway from the entrance hallway.

The main entrance to this hallway, and so to the building, is through a double set of plate glass doors. Immediately facing the visitor are full length plate glass windows through which may be seen the main laboratory working area. And at his feet is a six-foot diameter crest, set in the terrazzo floor, symbolic of building research throughout Canada. The crest was designed by J. I. Lawson, MRAIC.

Adjacent to this hallway is a combined exhibition area and conference room, the three units being so arranged that all may be thrown open when the Division is host to many visitors. Normally the exhibition area will house models and other display material, the conference room being used for meetings. The entrance hall was specially designed to conform to this general arrangement. The use of plate glass partitions, with aluminum trim, in this part of the ground floor adds much to the feeling of spaciousness which the open planning of the building has so generally effected.

In keeping with this open planning, the number of private offices has been kept to a minimum, one office only being provided for the general use of each research section. Correspondingly, the secretaries for all the research sections use a control secretarial office, conveniently located close to the main entrance hall. When research workers need privacy for study, calculation, or writing, it is intended that they shall use the library. For this reason and in keeping with the appreciation within the Division of the cardinal place which a library should occupy in research work, special attention has been paid to the design of the library. Carrels or study units have been provided for research workers and visitors, the library being intended to serve not only the Division but the construction industry generally. Cork tile has been used as a floor covering in the library to aid in noise reduction.

The dimensions of the main laboratory working area were determined by the size required to accommodate a typical two-storey house, As will be seen, such a house may be erected under the crane hook for structural and other testing. It will be noted that this area does not yet contain a large testing machine since the exact needs for this cannot yet be determined. Alternatively, steel beams have been embedded in the floor so that objects can be securely anchored for testing by means of the crane, specially designed for this purpose. Covered trenches in the floor provide for the extension of services to particular working areas.

Much of the laboratory work of the Division must be conducted under controlled atmospheric conditions. The building itself is not fully air conditioned but the site plan of the building fortunately provided a basement under the entire front section with practically no windows, thus making the conditioning of individual laboratories in this area a relatively easy matter.

Two special large cold rooms in the building are now in operation. They provide a laboratory for heating and insulation studies and a separate snow and ice research laboratory – one of the first ever to be built – which can be cooled to -40°F. and maintained at that temperature if desired.

The rock level at the building site considered in relation to existing ground levels gave a basement height of fourteen feet. This was most convenient for the horizontal distribution of services. Not only did it provide for adequate ceiling heights for the large cold rooms but additions and modifications to services in all the main laboratories can readily be carried out. One laboratory can be isolated if necessary, this being that in the basement designed for concrete and masonry work which will create special dust problems.

Finally, special note must be made of the architect's use of colour in the interior finish of the building. Unfortunately, the use of words, even when supplemented by black and white illustrations, can convey no idea of the singularly happy effect obtained by a free use of a wide variety of bright and vivid colours. Suffice it to say that this aspect of the aesthetics of the building has already been widely and favourably commented upon as an excellent example of 'colour dynamics'.

Building Services

The importance of services in such a building as this can well be imagined. It is reflected in the fact that nearly one third of the general contract price represented the cost of plumbing, heating and ventilating and electrical work. Hot water for heating, hot and cold water services, gas, compressed air, steam and electrical power had to be provided in all laboratory areas. Steam, water and power come in to the building through the service tunnel, adjacent to which is a special area in the basement for essential valve connections, water heaters, electrical transformers, and refrigeration plant.

In the basement, all service piping is in the open, being marked in conformity with the standard C.G.S.B. Colour Code which greatly facilitates all maintenance work. Services to upper floors are piped up a special service duct space, adjacent to the rear stairway and main elevator. The duct space also houses the main ducts conveying air from the ventilating fans in the penthouse to the individual room outlets.

The general contract provided for services up to the out-

lets adjacent to each laboratory bench. The necessary extension of the services and installation of all laboratory furniture was handled by the NRC Plant Engineering Service.

Construction of the Building

As with almost all public buildings, construction arrangements were handled for the Council through the Department of Public Works. Open tenders were called on the basis of plans and specifications prepared by the architect and consulting engineers. Four bids were received, the second and third varying by only 1½ per cent and the fourth by only 7 per cent from the lowest figure, an unusual tribute to the excellence of the contract documents. General contract for the building was awarded to the low bidder, the Robertson Construction & Engineering Co. Ltd. Since structural steel was in very short supply when construction of the building was contemplated, a separate contract for the supply and erection of the structural steel frame work was awarded to Dominion Bridge Company Limited in advance of the general contract award.

Before any construction was started, a meeting was held of representatives of the architects, consulting engineers, general contractors, the Department of Public Works and the owners in order to discuss the proposed construction schedule and the necessary administrative arrangements for the contract operations. Such meetings were held regularly at intervals of about three months until the building was complete. No details were taken up at these gatherings but the facility which they provided for discussion of common major problems proved to be of considerable assistance to all concerned with the building. The construction schedule was reviewed in detail at every meeting and obstacles in the way of future progress, actual and potential, were co-operatively considered.

The architect was represented on the site by a resident architect. Liaison between him and the owners was channeled strictly through a special liaison officer appointed from the staff of the Division of Building Research. This post was held successively by E. W. Glenesk, D. H. Rutherford and the junior author. All contacts with the resident architect and the contractors' representatives were made only through the liaison officers. This proved to be a most satisfactory arrangement. The liaison officer attended all job meetings convened by the resident architect.

In the early meetings with the contractors, in discussions with senior officers of the Council, and even in discussions within the Division itself, a scale model of the building proved to be of great use. It actually assisted with the final decision on at least one major aspect of the external design. It assisted the staff of the Division to visualize the building which they were to use. This proved to be of double use in that a real attempt was made to minimize changes in layout and arrangement after the award of the contract. Following a given date, no changes to the plans were permitted unless they were obviously going to correct an error or were to the agreement of architects, contractors and owners. As a result of this policy, the total number of change orders for both contracts was forty, including even the smallest items and distributed generally as follows:

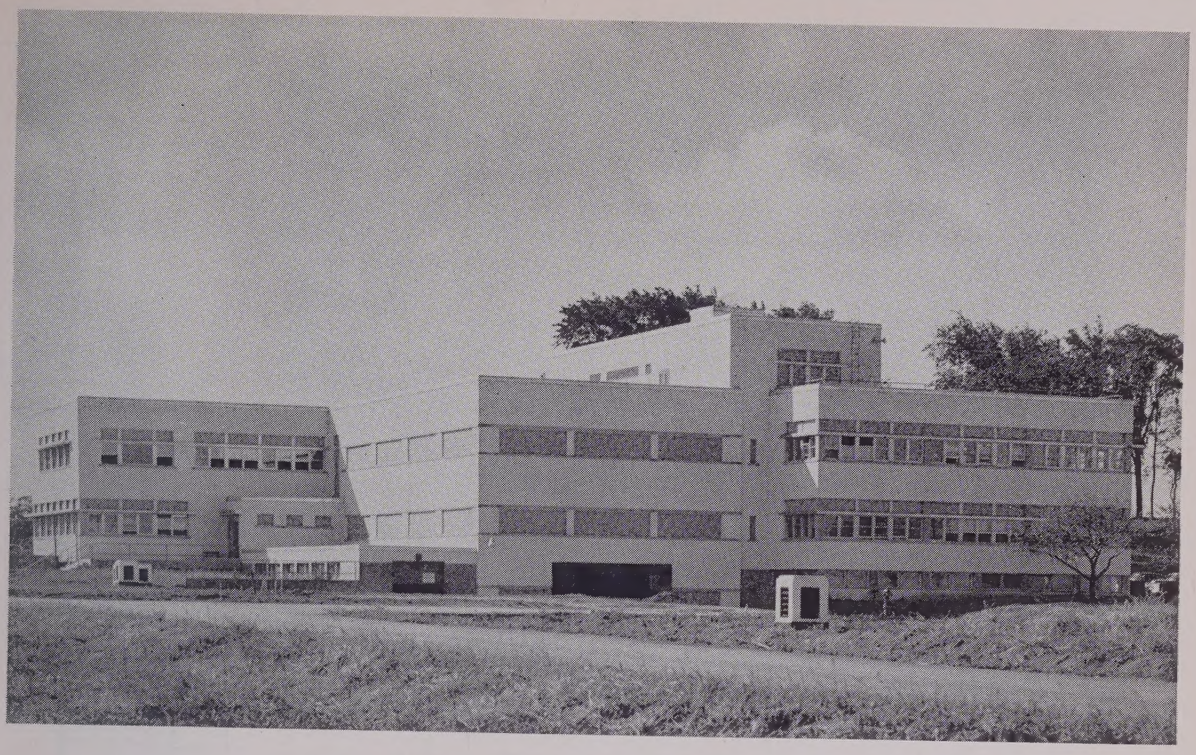
Summary of Change Orders

Reason for Order	*Credit*	*Extra*	*No Charge*
Job Conditions	1	7	—
Owner's Request . . .	7	12	2
Architect's Preference . .	—	7	2
Delivery Difficulties . .	—	1	1
Totals	8	27	5

The building has a total cubage of approximately one million cubic feet. The total contract price of the building was $1,088,000 or a cost per cubic foot of $1.08. The cost of the building complete with all extras paid and including all office and laboratory furniture, equipment and complete servicing of laboratories was $1,356,627 or $1.36 per cubic foot. The figure is noteworthy when the large amount of plumbing and electrical work in the building is considered.

Acknowledgements

Mr Meadowcroft personally directed the detailed design of the building, in association with Allan W. MacKay, MRAIC (now his partner) and with J. P. Keith & Associates as consulting mechanical engineers. E. F. S. Smith, MRAIC was resident architect. The general contractors were represented locally by G. Playfair-Brown. Ralph Wallace was general superintendent throughout the entire construction period. Dr E. A. Gardner, MRAIC, as Chief Architect, Department of Public Works, gave the project his personal attention. J. C. Elliott, Plant Engineer, NRC assisted throughout the work in connection with essential services. To all those mentioned, the senior author would record his appreciation not only for their skilled contributions to the work described, but for their part in an example of professional co-operation which will long be remembered.

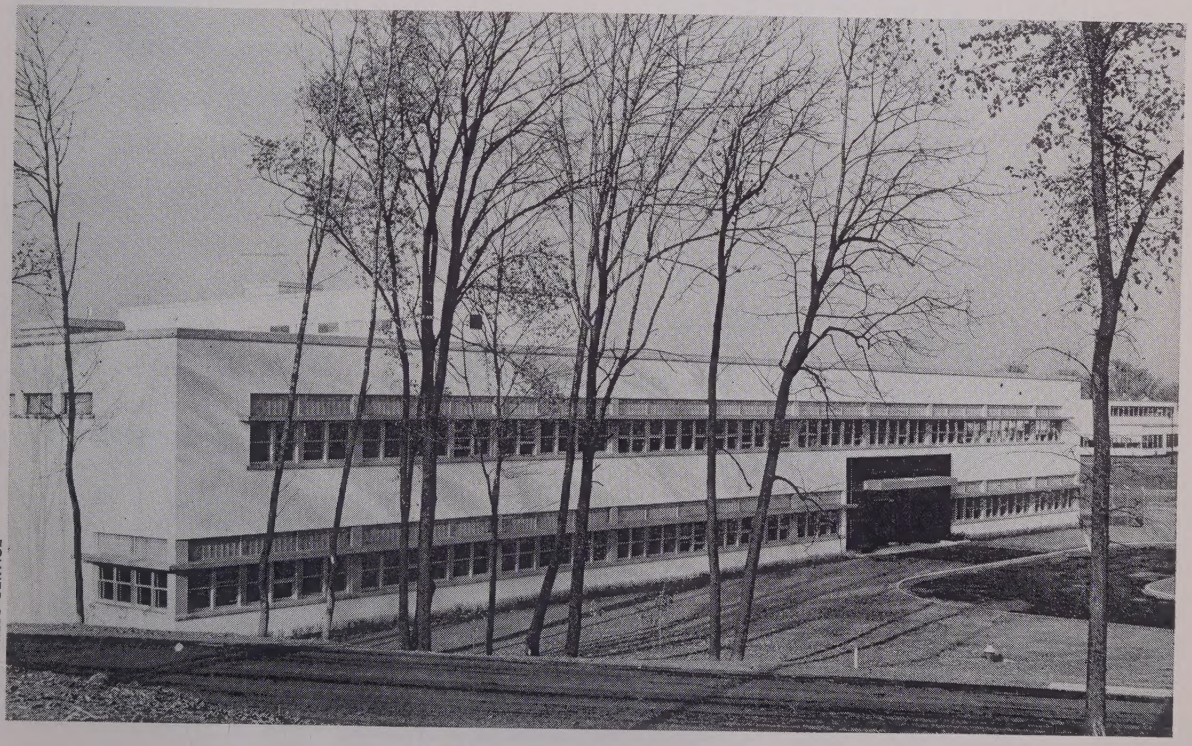


Rear view

Building Research Centre, Ottawa, Ontario

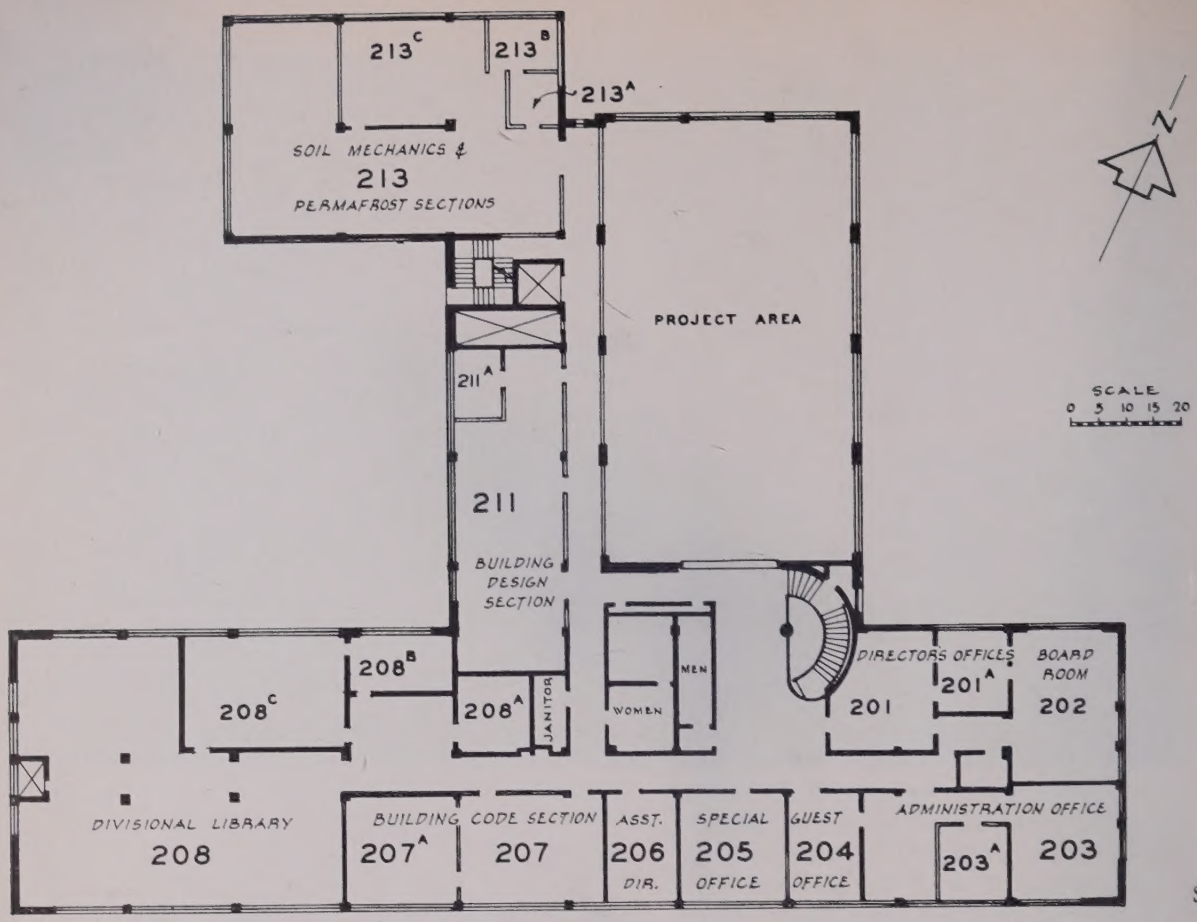
Architect, J. C. Meadowcroft

Mechanical Engineers, James P. Keith & Associates
General Contractors, Robertson Construction & Engineering Co. Ltd.

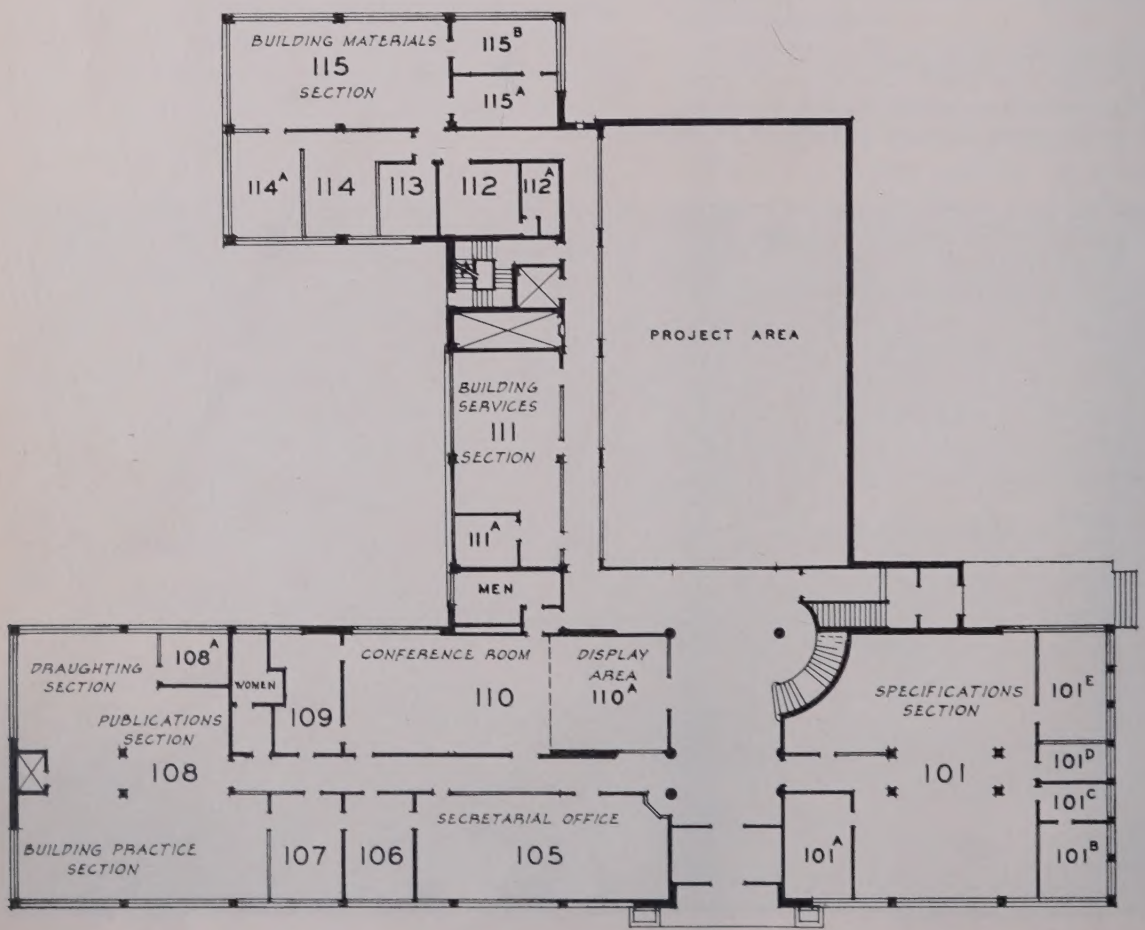


CAPITAL PRESS SERVICE

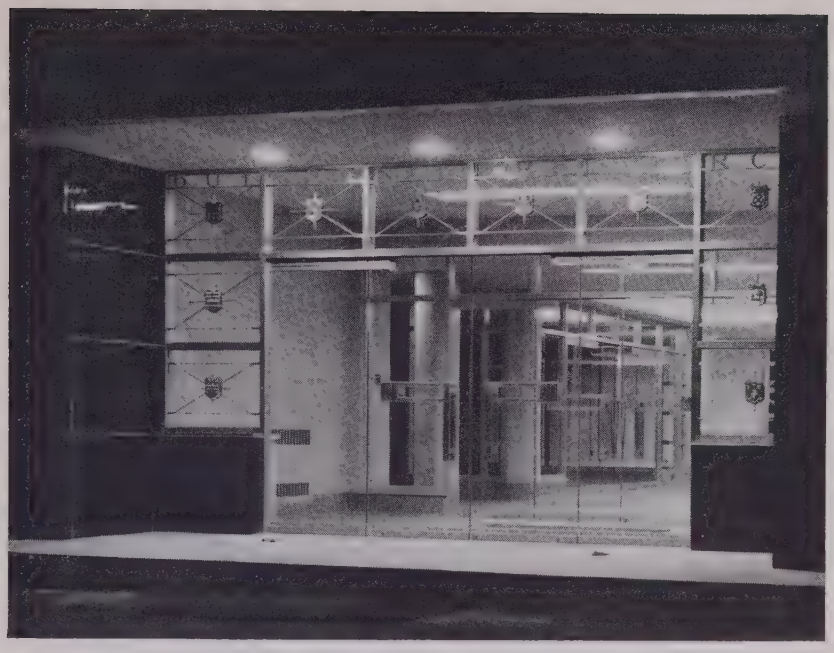
Front view looking north-east



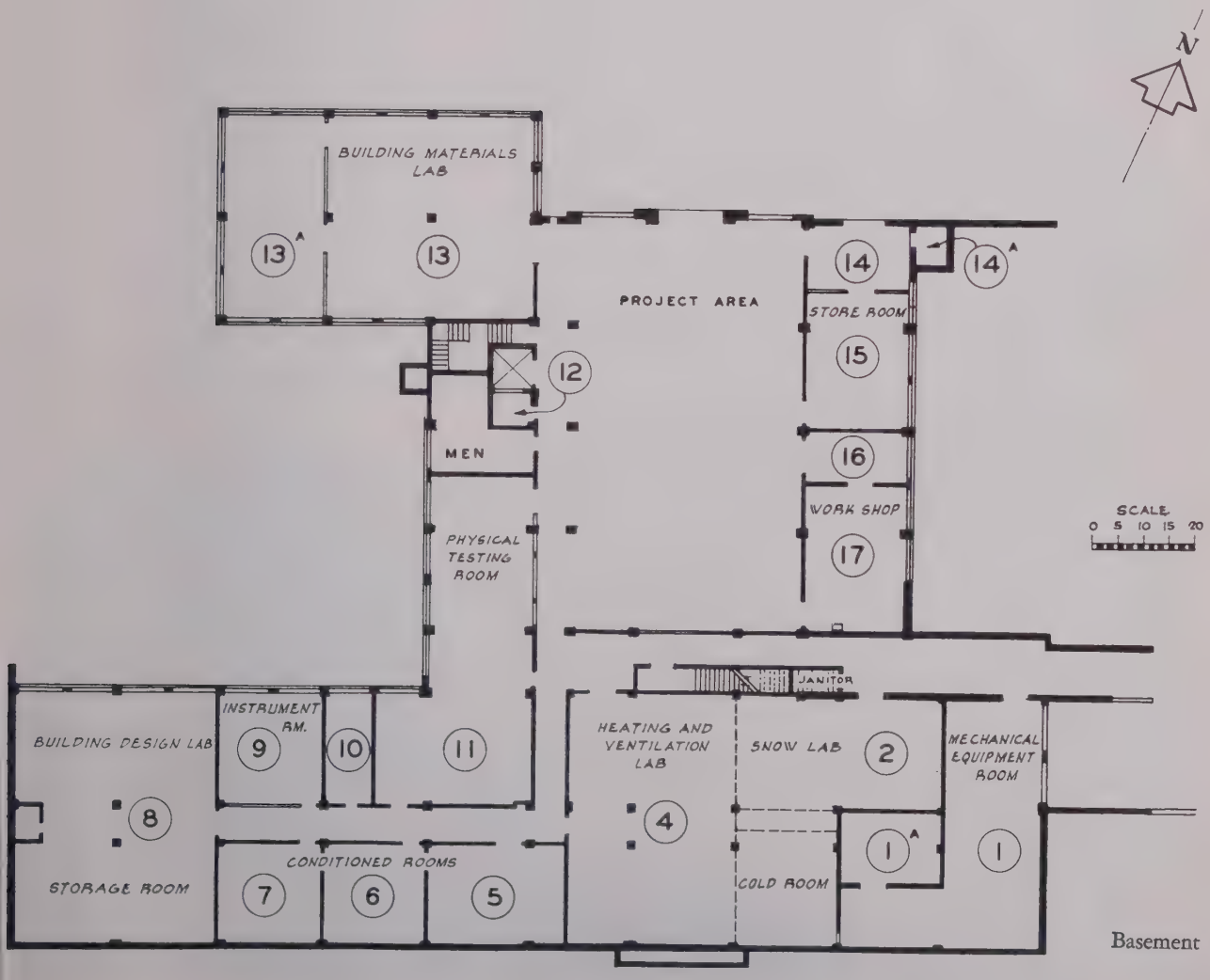
Second floor



First floor



Front entrance to building showing provincial crests



Basement floor

NATIONAL FILM BOARD

The library

Soil mechanics laboratory

Concrete, plaster and masonry research laboratory

Chandigarh

A paper read before the Vitruvian Society, Toronto
by Jaqueline Tyrwhitt

CHANDIGARH IS ONLY ONE of a number of new towns now being built in India, most of them in connection with large new power projects. Some of the other towns are being planned with the assistance of western consultants but several are being undertaken entirely by Indian architects and engineers.

All the major decisions in connection with Chandigarh were taken directly by the Government of the State of the Punjab in agreement with the Federal Government of India. That is to say, the decision to build a new capital city for the Punjab to replace Lahore which went into Pakistan at the time of the partition of India; the decision as to the size and character of the population, and the selection of the site for the city.

The first sketch plan was drawn up by the American firm of Mayer and Whittlesey. It was then found that, for various reasons mostly outside their control, changes had to be made; dollars were short (India is on soft currency), and their chief designer, Matthew Nowicki, was killed in an air crash. The Indian Government decided to engage someone else to help them complete the work, and they invited Le Corbusier to undertake the job. He became planning consultant for the whole city (being expected to retain as much as possible of the earlier plan) and also architect for the main group of Government Buildings — the Capitol. The conditions of his appointment were that he should himself spend two months there each year and that he should select three architects, who would be appointed by the Punjab Government, to direct the general building of the town. These were each required to build up an office upon the site consisting exclusively of Indian architects, and to remain there solidly for three years. They were to be responsible for designing houses for various categories of government to specifications laid down by the Government, and also schools, clinics, government offices, etc., as decided by the Government. At the end of three years their offices would be taken over by the Indian staff they had built up, but Le Corbusier would continue as planning consultant and architect of the main government centre.

The appointment of Le Corbusier was made in the summer of 1950. In February, 1951, he and two of the three senior architects went to India. These were Maxwell Fry and Pierre Jeanneret. The third, Jane Drew, followed a few months later. The three years were up in February, 1954. By then, the whole town had been planned in detail; all the major roads and services were in; the railway had been rerouted and the station built. In addition, 3,000 houses were in occupation and many more under construction. Several schools of various categories (including

The north Indian villager lives with his animals in a mud-walled courtyard.

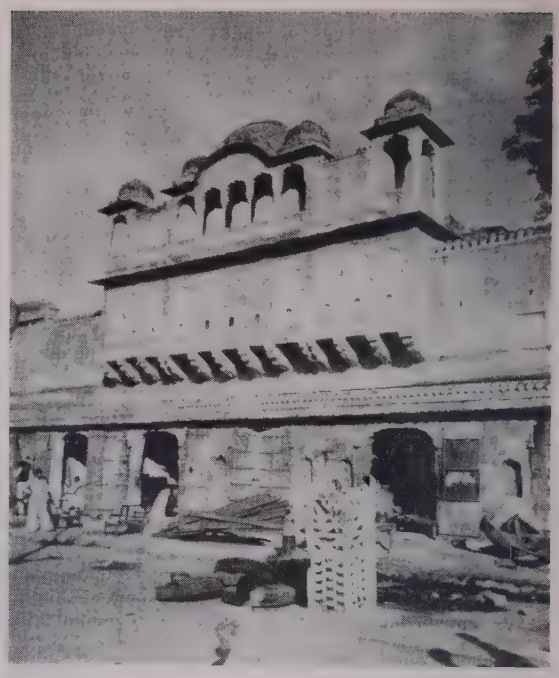
the engineering college), a government printing plant, hotel, health clinic, a number of shops and various other buildings were in operation. In March, 1954, Maxwell Fry left for England and Jane Drew followed in August. Their offices, each of about twenty architects, are now entirely in Indian hands. Pierre Jeanneret will stay on as he has to oversee the construction of Le Corbusier's buildings, and his office will also continue to design a number of other buildings.

As Chandigarh is primarily a government project, all work is supervised by the Punjab Department of Public Works, which also carries out much of the road work and public utilities by direct labour. The rest, which includes almost all the building operations, is put out to tender and allotted to the lowest bidder. Once the architect has completed a set of working drawings he has nothing further to do with a building. All responsibility for supervising its construction is in the hands of the Public Works engineers, who may also handle small adjustments, etc., as they deem necessary. If the architect does, by chance, visit his building under construction and notice some error or want to suggest some alteration, it is extremely difficult for him to do anything about it. He most certainly cannot proceed to give instructions to anyone upon the site.

Le Corbusier managed to get these conditions altered for his High Court of Justice, partly due to its special structural character, but the three senior architects have had to fight constantly (and often unsuccessfully) for their right to supervise their own buildings. Now that two of them have gone, it is almost certain that their offices will lapse back to the normal state of affairs in which the architect is considered to be entirely a desk man with no more control over the erection of any of his structures than the designer of a mail-order standard bungalow listed in any Home & Garden journal. It is unnecessary to elaborate here the stultifying effect of this upon the development of Indian architecture.

Construction is further hampered by heavy standards of safety set up to guide the Public Works engineer in dealing with a shady contractor. Most of these were instituted years back by English government servants, and are modelled upon 19th century codes drawn up in England which have very little relation to economic efficiency of construction or to the problems of the Indian climate. This, in the north of India, has three distinct seasons: blisteringly hot dry weather (around 110° F) from March to July; swelteringly hot damp weather (around 95°) from July to October; bright sunny days (around 75°) and chilly nights (around 40°) from November to February. The crucial aspects are the intolerably hot nights of the early summer, when every wall gives off the latent heat it has stored up during the day; the need for through ventilation during the monsoon season (which lets in dust storms in the earlier part of the year); and the need for complete shelter to keep out the cold of the winter nights and for some form of space heating.

Between the 16th and the 18th centuries, northern India built up a fine tradition of brick architecture, well suited to its difficult climate and with superb craftsmanship. This declined sadly under British rule, when it became



The fine brick architecture of Jaipur, a "new town" of 1720.

fashionable to import the vernacular of the ruling power, and only the English – and then timidly and ignorantly – made any attempt to embody the great Indian traditions.

There is today no living tradition of northern Indian architecture except in the mud houses of the Indian villages where high standards of primitive craftsmanship still persist.

The wealth of India lies in her vast natural resources and her huge reservoir of man power (much larger than the whole of the North and South American continents combined). As many, or even more, huge projects of controlling rivers are currently being undertaken in India than in the whole of the rest of the world. Under Indian conditions, large gangs of men and donkeys can outstrip bulldozers, trucks and tractors, and most of the enormous construction works now in progress are being created by human and animal labour.

These were the conditions facing Le Corbusier when he went to India in 1951, leaving the Unité d'Habitation at Marseilles approaching completion.

The site of Chandigarh lies on a plateau near both main road and railway on the lowest slopes of the Himalayas. The plateau itself is studded with large mango trees and backed by the foot hills of the mountains which, on clear days, form a stupendous backcloth to the whole city.

The motivations of the plan can be divided into four main groups:

The need to create a dramatic governmental symbol to express the unity of the newly divided Punjab.

Urban housing conditions for 10,000 transplanted government servants and their families.

Differentiation, but not segregation, of the different social groups: differentiated by salary scale, religious faith and caste.

Clear separation of traffic routes, as the range of incompatible speeds in India is even greater than here: the 50 mph car contrasts violently with the 1½ mph bullock

Standard suburban architecture.

cart, to say nothing of the numerous 8 mph cycles and 2½ mph walkers.

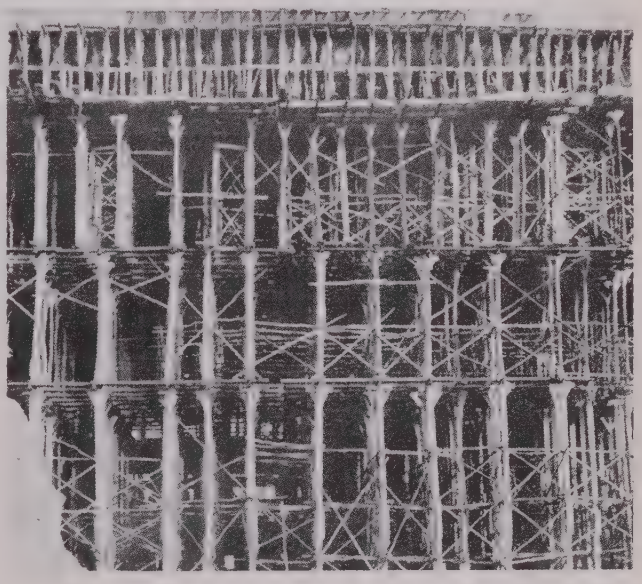
Mayers' original plan was on fairly orthodox American green belt lines. Le Corbusier kept to it to some extent, but instituted a clear differentiation of seven types of roadways: the major highway (VI); through roads, and civic avenue (V2); circulatory roads (V3) with entrances every 400 yards to the residential sectors; shopping streets (V4); service roads within the sectors (V5); entrance lanes to each front door (V6); and footpaths (V7).

The total population of Chandigarh will include 10,000 government servants of all grades of income from the lowest paid 'peons' to high court judges. These 10,000 mount to 50,000 with their families as most Indian civil servants are expected to support and to house their parents or grandparents as well as their wives and children. Retail traders and service industries will almost certainly double this population very rapidly; indeed the government printing press, shopping centres, hotel, schools and entertainment trades had already attracted a good deal of additional population by last February, although only about a third of the government offices were yet operating in Chandigarh. This design of the city in large individual sectors makes it possible for it to be reasonably complete at all stages of its growth. It can easily expand to the planned 150,000 and provision is made for further growth if need be to half a million.

Chandigarh is essentially a seat of government and the new group of Government Buildings stands upon a raised plateau to the north, approached by long civic avenue for the dignified processions which are very much part of Indian ceremonial. All of these buildings are designed by Le Corbusier, and the first to be erected is the High Court of Justice which will be officially opened this fall. The High Court has been meeting in Chandigarh now for the last year, but its deliberations have been held in the new engineering college.

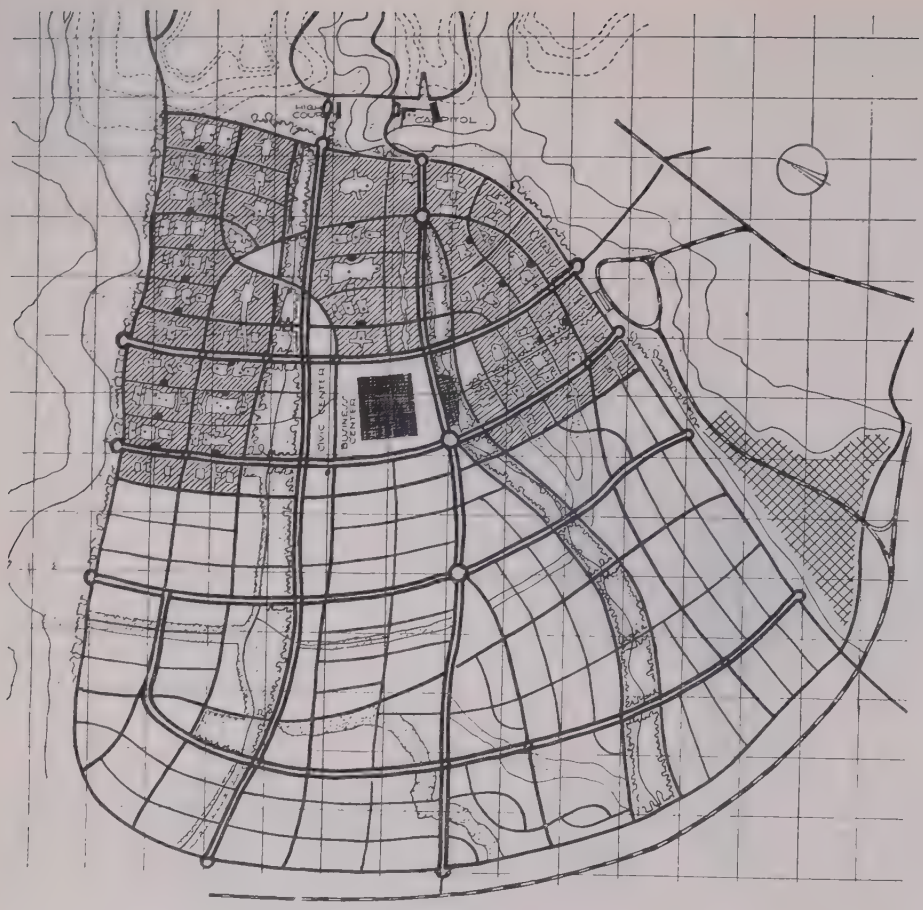
The second building to be completed will be the long nine storey Secretariat, of which the foundation stone is already laid. After that will come the House of Assembly – the Parliament – and then the Governor's Palace. Le Corbusier has grouped these buildings as upon a stage against the colossal backdrop of the Himalayas. Their nearby craggy ranges are magnificent enough, but upon a clear winter day one can see the shadowy bulk of the main mountains rising high into the vault of the sky. In this grand setting Le Corbusier has placed four large buildings, like sculptures upon a terrace, linked by the lines of a formal landscaped area – a park rather than a garden – which is somewhat reminiscent of the formal layouts of the Moghuls. Its level lines of water, paths and turf are varied with trees (the huge mango trees that are the present glory of Chandigarh) and twenty-nine large mounds, and, standing slightly apart but in a position where it is always visible, will stand the great symbol of Chandigarh – the Open Hand. This universal symbol of justice, of friendship, of generosity has yet other meanings in India, which in many ways has close links with prehistory. When a man child is born to the household of an Indian village, the neighbours chalk their hand with red ochre and imprint it upon the side of the doorway. It is a symbol of good fortune and affection; of strength and continuity. So this great hand, fifty feet high, will stand facing the city, with its back to the Himalayas, turning slightly upon its axis and thus embracing the whole scene. It will be built up of wood covered with thin sheets of beaten iron – a traditional Indian art – and will turn upon ball bearings.

The final effect of the High Court was not easy to judge last February as the whole of the front elevation was still completely shrouded in scaffolding. Its chief feature – architecturally speaking – is the roof, but at that time this could not be realized upon the site, but only from Le Corbusier's sketches. The building is approached by shallow



High Court buried behind forest of scaffolding.

steps which lead into a great and high hall that penetrates through the height and breadth of the whole building. The deep overhangs should keep this cool even in the heat of summer. To one side is the High Court, to the other a series of eight courts, surmounted by eight more that will not be fully completed until they are needed. Offices and a restaurant occupy the top floor above which is the great double roof. The lawyers and their clerks have their offices and consulting rooms in an adjacent wing. Access to the upper floors is by a ramp that crosses and re-crosses the great entrance hall. All window openings are shaded by louvres which are almost five foot deep, and are separated from the walls of the building itself to prevent heat transmission. The whole building is carried out in re-in-



Mayer and Whittlesey's pilot plan, 1949.

forced concrete and its monumental scale is in keeping not only with its setting but with the Indian need for a powerful symbol of the new might and contemporary spirit of their great country.

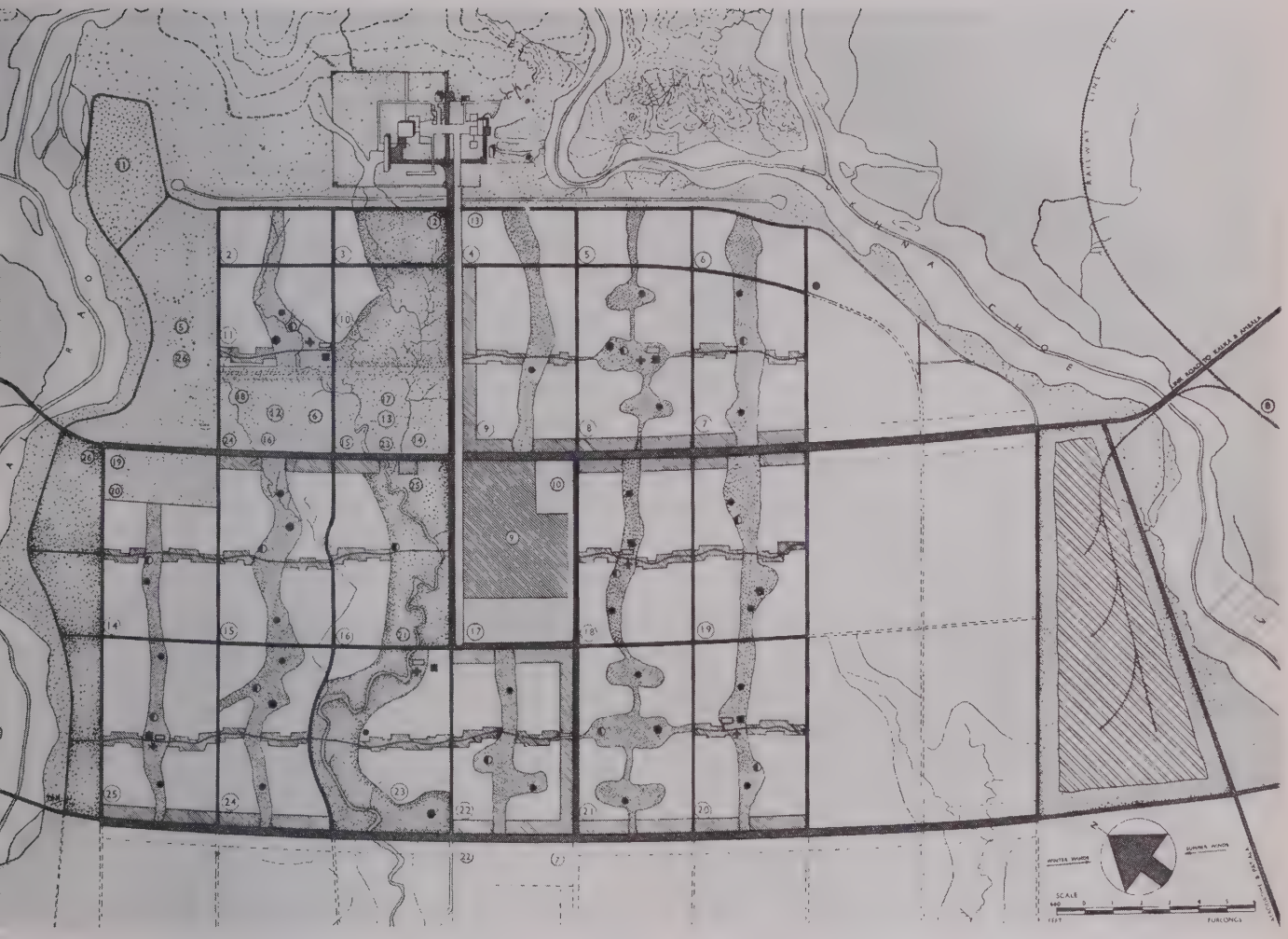
In marked contrast to the deliberate magnificence of the Government area – the Capitol – the residential sectors of Chandigarh have been, equally deliberately, planned to cater for the needs and the incomes of the lowest paid government servants. The buildings are almost all of locally made brick and seldom have more than two storeys, most of them only one. The 3,000 dwellings that were complete in February, 1954, were in sectors 22, 23, 16, 2, 3 and 4. The sectors are entered from the surrounding circulatory roads (V3) at four points. Each is encircled by a service road (V5) and traversed from east to west by a shopping street (V4), which is purposely curved and intended for the sole use of slow moving traffic – the bullock cart and the bicycle. The shopping booths are set back at angles from this street upon the south side (facing north) and protected by trees. From north to south each sector is crossed by a wide green area, traversed by a footpath (V7). This park strip contains the schools and health clinic and playing fields. The green bands are contiguous from sector to sector and form a continuous park system throughout the city, while at the same time serving as unifying elements within each sector.

The housing itself is always grouped into small units of the same order of dwelling types, usually about one hundred and fifty dwelling units in each group; and a dozen or more of these groups are included in each sector. This system has many advantages. It has met the Indian requirements for dwelling types falling into fourteen categories, to tally with the salary grades of their employees; each government servant being entitled to a dwelling related to his grade.

It has made it possible to provide an urban-type of setting, which was one of the first intentions. It has allowed for the minimum essential degree of segregation required

Entrance to secondary school

Chandigarh, 1952



The Capitol block at the top has numbers 1 — 4 that do not appear on the plan.

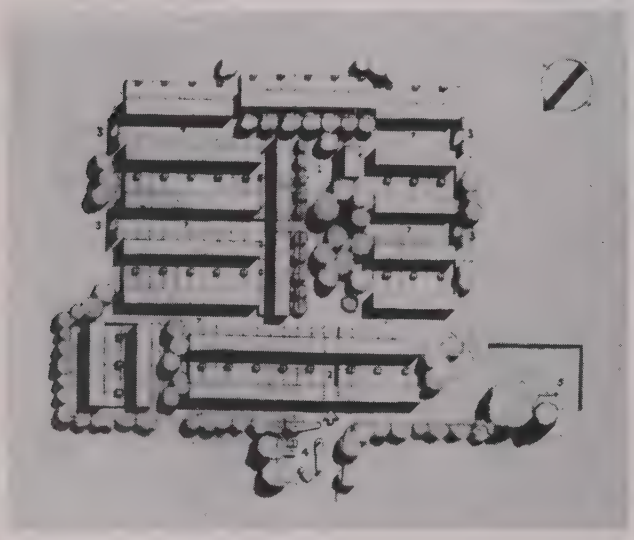
Small circles 5 — 26 refer to legend.

Larger circles 1 — 26 show sectors.

1 Assembly chamber
2 Secretariat
3 Capitol
4 High Court
5 University
6 Stadium
7 General market reservation
8 Railway station
9 Main commercial centre
10 Town Hall
11 Engineering College
12 Chief Minister's residence
13 Chief Justice's residence
14 Public Library
15 Museum
16 School of Arts and Crafts
17 Govt.: College for Men
18 Govt.: College for Women
19 Dental College and Hospital
20 Hospital
21 Maternity Hospital
22 Sarai
23 Theatre
24 Politechnic Institute
25 Red Cross offices
26 Boy Scouts

by the different social groups and caste groups that make up the Indian community, while, by keeping the groups small (750 people) and, by making all facilities common to the dozen or so different groups contained in each sector, it has made it extremely difficult, if not impossible, for any individual group of dwelling units to harden into a ghetto. Another practical advantage of the system has been the fact that each dwelling group could be handled by an individual building contractor, which has made for speed and convenience during the construction period.

The most numerous of these dwelling groups, or villages as they are termed, are designed for the lowest paid workers – the peons. These villages usually house 750 persons and each dwelling lot is about 1,200 square feet. In the Indian climate the most important 'room' of the 'house' is the yard – an enclosed area of private open space. It is here that one sleeps throughout the summer, except during the worst of the monsoon, and it is here that one lives throughout the day in the winter. Sketch designs for a

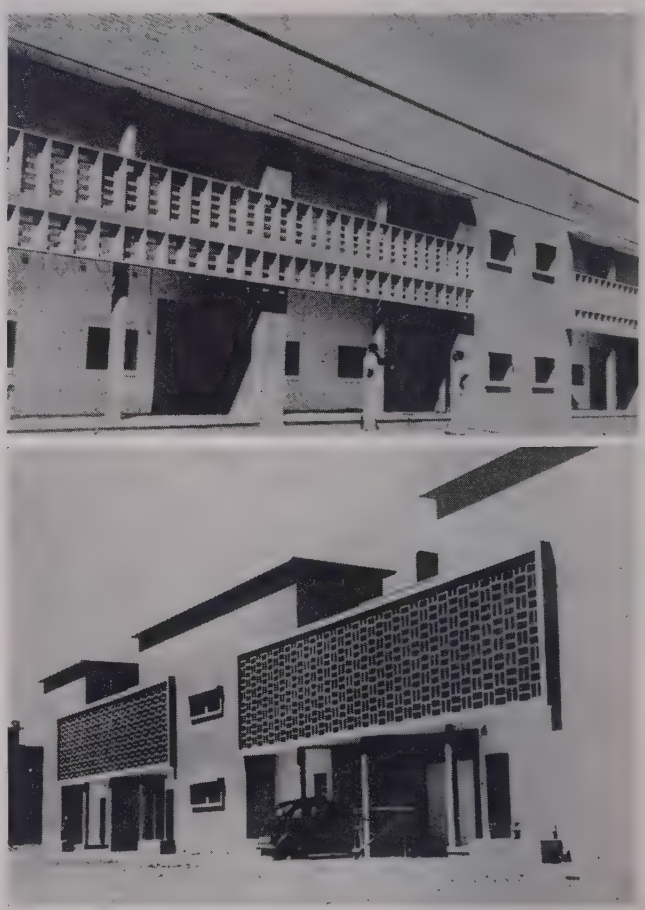


Typical layout of peons' village.
All trees are carefully preserved.

typical peons' village were first produced by Le Corbusier but the actual responsibility for all house designs have been in the hands of the three architect's offices, and illustrations are shown of typical villages designed by Jane Drew and by Pierre Jeanneret.

The next most numerous house types are two-storey row houses for the various grades of clerks. These are grouped in the sectors with the peons' villages, but the few houses built for the wealthy – the judges and some of the members of parliament – have been placed in sectors 2, 3 and 4 where large tracts of land have been sold off to private builders for the erection of houses for the more well-to-do of the additional population that will be attracted to the city. While all the lots sold well, the new owners have not shown any haste to start to build. This has been partly due to the difficulty in obtaining contractors at any reasonable price during the peak period of the city's growth, but also to the intention of many buyers to re-sell the land at a profit when the city becomes more built up. The result is that at present the groups of dwellings for the rich look strangely isolated out on a prairie between the busy human-scale urban sectors and the great monumental-scale Capitol area.

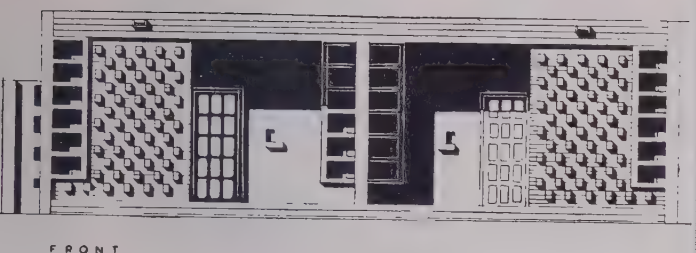
The over-riding impression one gets of Chandigarh is its urban nature; that this is a real city that is rising so rapidly beneath one's feet – not just a half-temporary garden suburb. The appearance of the houses is unexpected. They are not copies of anything in Europe or in India. They are honest attempts to find a way of interpreting the contemporary Indian way of life – a cross between traditional habits and westernized ideas – in terms of brick construction – the most economical and efficient building material readily available – and the requirements of the Punjabi climate. They are deliberately experimental in a country where there have been few original experiments made in housing – though much indiscriminate lifting of ideas from all parts of the world. Some have proved highly successful both in terms of cost and comfort, others less so. The need for through ventilation during the monsoon

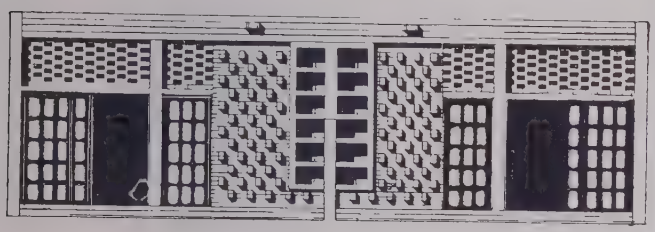


Two-storey row houses for clerks.

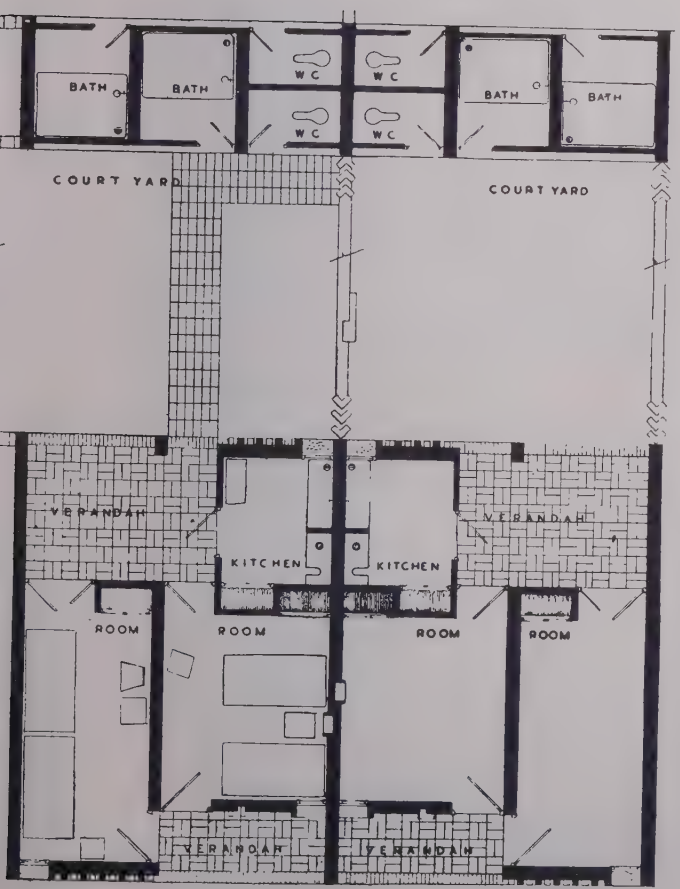
months encouraged a revival of the 'jalli' or perforated brick wall; but the unexpected force of the sand storms of early summer meant that the housewives of some early designed houses were faced with overwhelming cleaning problems. Each design has led on to another, and there is no doubt that a new ferment had started in the design of dwellings for India that may be able to bring to birth a new and truly Indian development of domestic architecture.

Peons' village designed by Pierre Jeanneret





Entrance. Note patterned wall always in half shade and projecting water spout from flat roof.

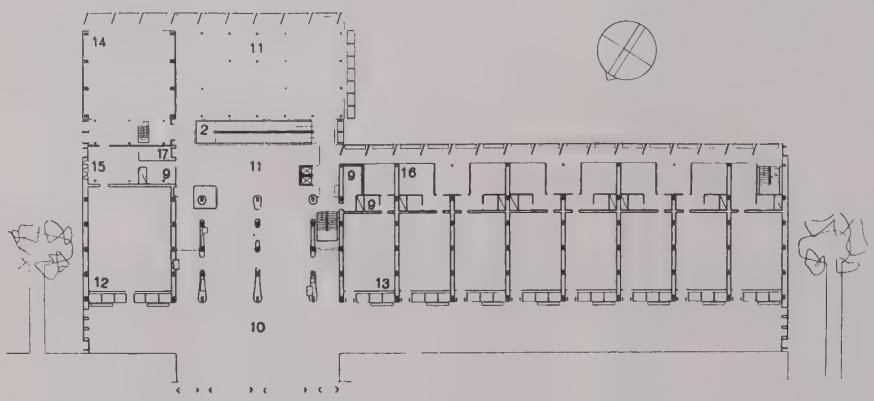


Plan and elevations. Note interlocking line of utilities and narrow vertical windows giving top and bottom ventilation and always shaded.

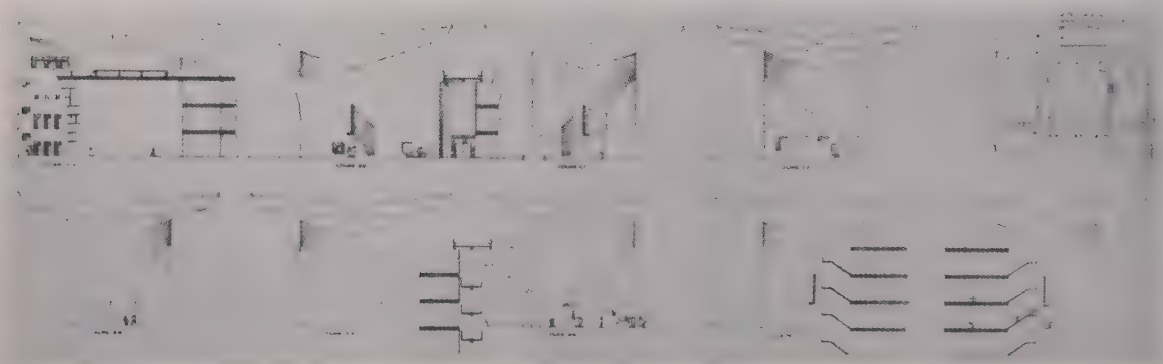
Houses are grouped around courts

Concrete window louvres are separated from main structure to prevent heat transmission.

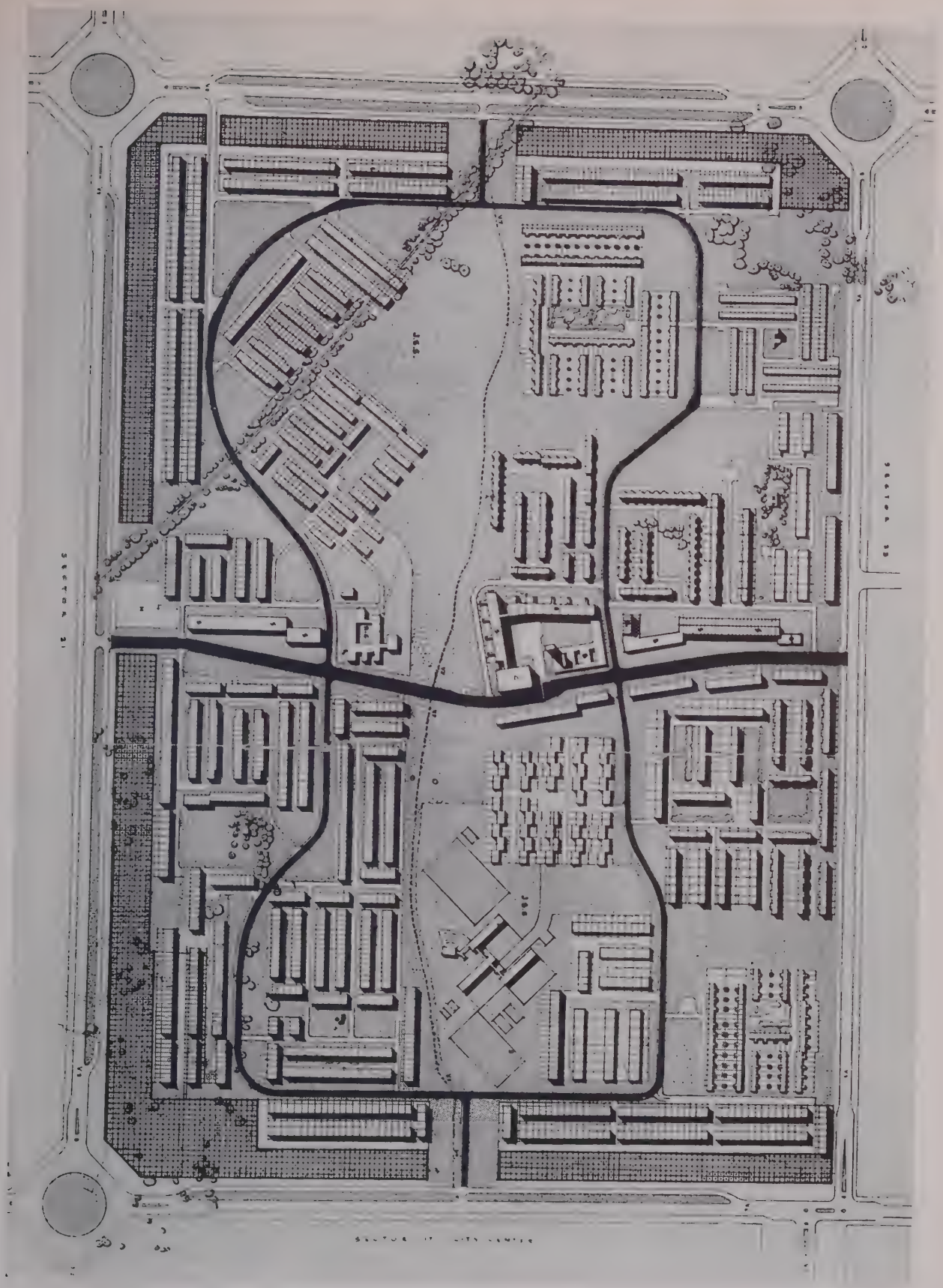
Sketch showing front elevation and the Open Hand



Ground floor



Section through main hall



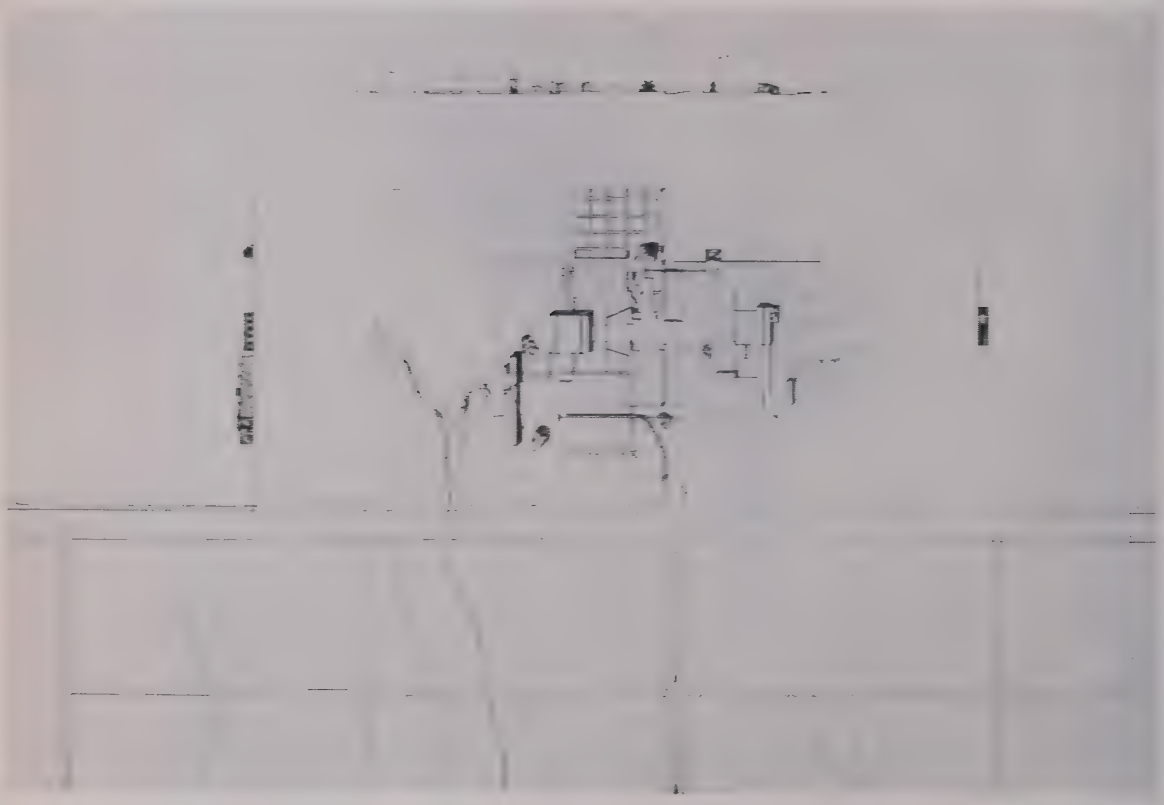
Layout of Sector 22

Commercial reservation

Open spaces

N.S. Nursery School
J.S.S. Junior Secondary School
B Booths
S Shops-cum-flats
C Cinema
H.C. Health Centre

Scale: 180 feet to 1 inch



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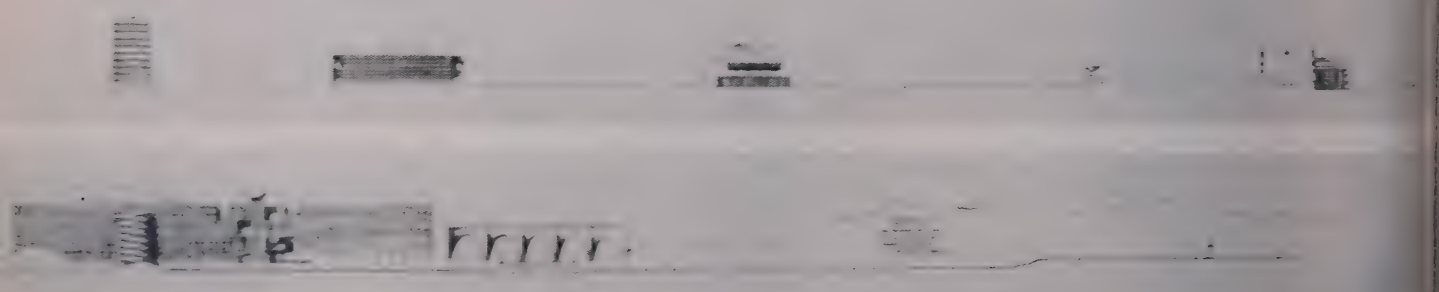
Secretariat Assembly Chamber Governor's Palace Open Hand High Court



St. Giles Presbyterian Church, Peterborough, Ontario

Architects, Blackwell, Craig and Zeidler

Structural Engineers, Wallace, Carruthers & Associates Ltd.
Mechanical Engineers, S. M. Peterkin Co. Ltd.
General Contractors, Charles Huffman Ltd.

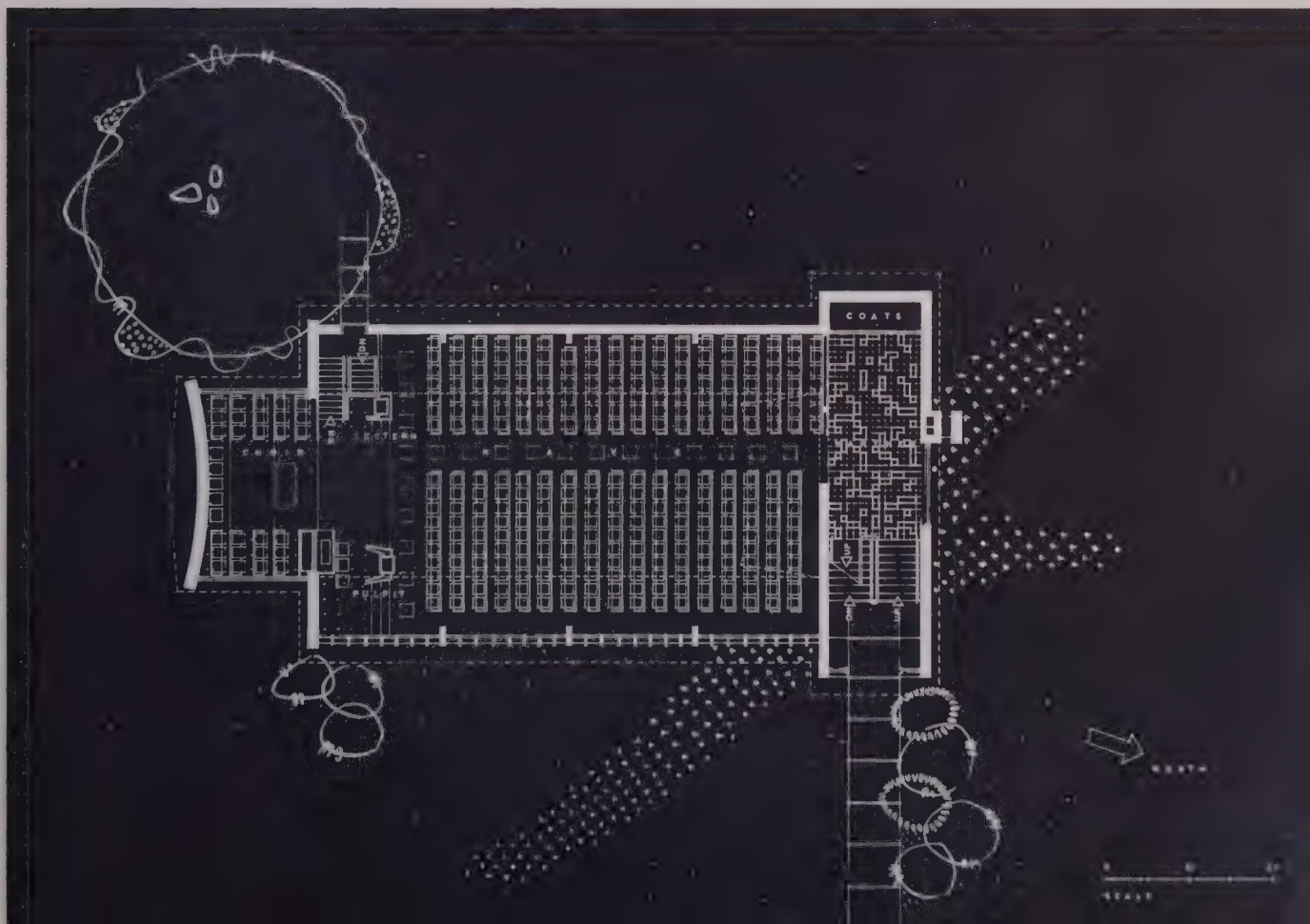
St. Giles Church seemed to face its designer with more restrictions than possibilities. The church was wanted by a small new congregation who were holding services in a school basement. Only $60,000 was available for the building costs. The church required a seating capacity for approximately 400 people, as well as a large Sunday school, and the necessary auxiliary rooms. The needs of the whole church had to be contained in one building.

Inside the entrance which is level with the sidewalk grade, open concrete stairs lead down into the Sunday school and up into the narthex and balcony. This split level arrangement allowed a compact building, lifted the nave only half a flight above the ground, and created a well lit Sunday school, which was 4' below ground. It also avoided outside steps. The narthex can be opened into the nave to provide overflow space for special services. The basement contains Sunday school, a nursery, vestry, choir room, kitchen, washrooms and boiler room. Vestry and choir room have a direct stair to the upper choir and pulpit.

The light falls into the Sunday school and the nave above from the east side, directed by deep wooden piers of laminated fir which project as large vertical mullions. The piers prevent direct sunlight glare from the congregation and, from the nave, create the impression of a closed wall, concentrating the light onto the choir. The upper part of the roof in the nave was lifted to form a clerestory. The high ceiling is carried over the choir connecting the clerestory to the choir window. Exposed brick walls partially conceal the choir windows from the congregation. As a result, the choir receives great emphasis from the light of the windows and the play of light between the dark brick wall at the front of the nave against the light curved wall. The large celtic cross of copper sparkles in the morning light.

The V braces at the roof are needed to provide lateral support for the raised monitor roof against wind forces. The south wall laid in a brick pattern is curved to withstand the wind pressure in spite of its slenderness. The play between the east glass wall and the concrete block wall at the west side was not only to let in the early morning sun and cut out the hot west sun, but also to provide lateral wind bracing for the arches.

Cost of building - - - $61,553.08	*Cost per cu. ft. - - - - - 57 cents*
Cubic contents - - 106,788 cu. ft.	*Cost per sq. ft. - - - - - - $8.56*



ROY STUDIO

The north front

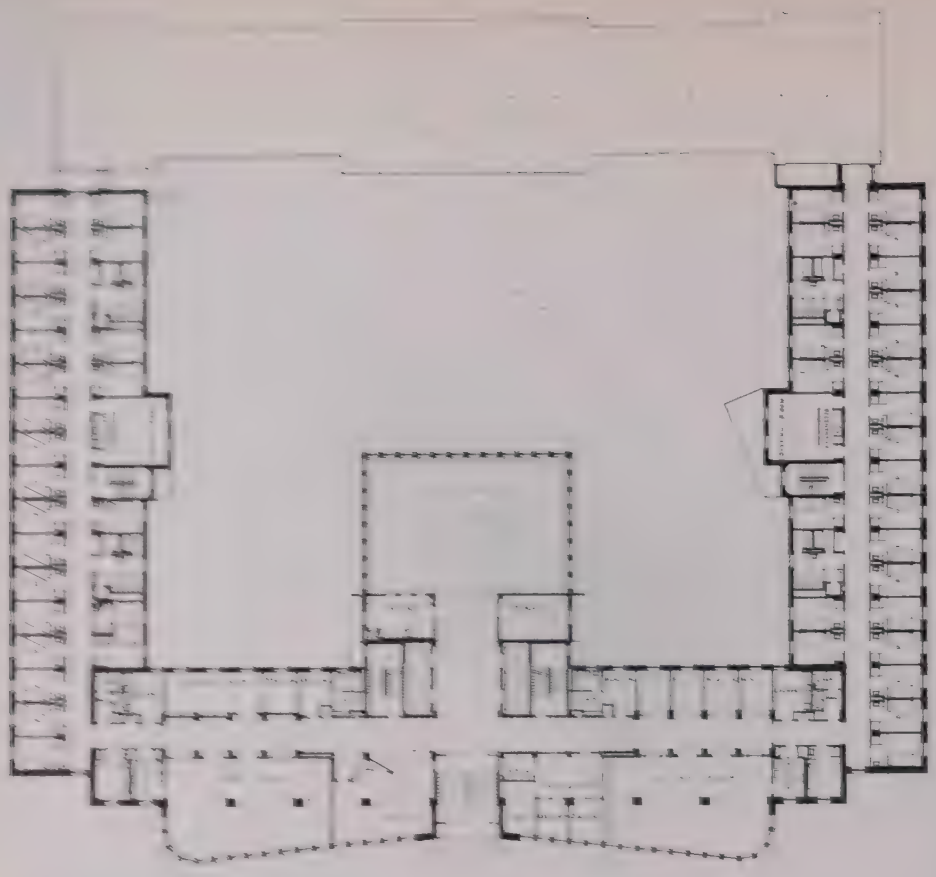
Detail of east wall

Interior looking south

HOLY STUDIO

Interior looking north

The choir wall



Ground floor

Student Nurses' Residence, Vancouver General Hospital, British Columbia

Architects, Thornton and Matheson

Consulting Structural Engineers, John B. Rena & Associates
General Contractors, Mainwell Construction Company Ltd. (First unit)
Northern Construction Company & J. W. Stewart Ltd. (Second unit)

Typical bedroom

Sunroom at roof level

INDUSTRIAL PHOTOGRAPHICS

Ground floor level from south-east

View from north-east

INDUSTRIAL PHOTOGRAPHICS

CALENDAR OF EVENTS

Annual Meetings of the Provincial Associations:
Manitoba, Fort Garry Hotel, Winnipeg, February 12th, 1955.
Nova Scotia, May 6th, 1955.

Special RAIC Council Meeting at the OAA Building, Toronto, February 25th to 26th.

British Architects' Conference, Harrogate, Yorkshire, June 8th to 11th, 1955.

LA SOCIETE DES ARCHITECTES DU DISTRICT DE QUEBEC

At their monthly meeting, Thursday, November 11th last, which was presided by R. Dupéré, the members of the Société des Architectes du District de Québec elected their new Council for 1955. This Council, however, will not sit until next January. The newly-elected members of the Council are: E. Fiset, President; G. Chabot, Vice-President; N. Mainguy, Secretary and R. Blatter, Treasurer. The members also chose Robert Blatter, Edouard Fiset and Maurice Mainguy as possible delegates from Quebec to the PQAA. It was then resolved to form a committee to draft the answer our Society will send following the memorandum received from the Association des Constructeurs de Québec. This committee is composed of M. Mainguy, R. Blatter, E. Fiset and L. Mainguy.

R. Blatter gave a report on the conference committee and he informed us that H. Talbot will be our next speaker; he will speak on "Professional Practice in the Field". On a motion by J. M. Roy, adopted unanimously, our exhibitions committee was given the task of studying the possibility of having a Calvert Exhibition in Quebec. At the close of our Meeting, L. Mainguy, President of the PQAA, gave a lecture with slides on "Professional Practice in the Office." He was introduced by R. Blatter and thanked by J. M. Roy.

Noel Mainguy, Secretary

PARTNERSHIP CHANGES

Durnford, Bolton and Chadwick, Architects, announce the formation of a new firm for the general practice of architecture and to continue the work of the firm of Fetherstonhaugh, Durnford, Bolton & Chadwick, Architects, which was dissolved on December 31st., 1954. Mr H. L. Fetherstonhaugh remains with the new firm in a consulting capacity. Mr Michael G. C. Ellwood joins the new firm as an Associate.

H. Ross Wiggs, Architect, announces the formation of a partnership to carry out the general practice of architecture. The firm will be known as Wiggs, Lawton & Walker, Architects, with offices at 4350 Sherbrooke Street West, Montreal 6, Quebec.

CANADIAN GOVERNMENT OVERSEAS AWARDS

The Royal Society of Canada administers awards in the Arts, Letters and Sciences. Fellowships of $4,000 and Scholarships of $2,000 are available, tenable in France and the Netherlands, for students with M.A. or equivalent proceeding to a higher degree. Application forms and full information may be obtained from the Awards Committee, The Royal Society of Canada, National Research Building, Ottawa 2, Ontario.

CONTRIBUTOR TO THIS ISSUE

Jaqueline Tyrwhitt toured Canada in 1945 as the guest of the RAIC to report on wartime developments in British Planning practice. After studying at the Architectural Association in London, she became first a landscape architect and later a town planner. From 1941 to 1948 she was Director of the London School for Planning and Regional Development and Director of Research of APRR (Association for Planning and Regional Reconstruction). Since 1948 she has been visiting professor of town planning at the New School of Social Research, New York; Yale University, and the University of Toronto, and has lectured or conducted seminars at many other universities including UBC, Harvard, Princeton, California and Chicago. In 1953 Miss Tyrwhitt was appointed by the United Nations Director of an International Seminar on Housing and Community Development for S.E. Asia and Adviser to the Government of India on their Exhibition of Low Cost Housing. She remained in India for almost a year and has since been working with the University of Toronto on a Ford Foundation grant.

FUTURE ISSUES

February	Zurich Airport
March	Students' Issue — University of British Columbia
April	Maritimes
May	Office Buildings

VIEWPOINT

Would Canadian architecture benefit by articles or comments of critical appreciation in the Journal?

In reply to your question I must say that criticism in the *Journal* would certainly be useful, but not nearly so useful as more, and better, articles concerned with architectural criticism in non-technical magazines and papers. Canadians are extremely ill-informed about architecture, and in the main are indifferent to it. They need to be taught how to look at buildings, and how to get pleasure from buildings. A solemnity surrounds the whole subject of architecture in Canada which needs to be broken down, for buildings are for people, and people ought to know something about buildings. I fear that most of the archi-

tectural articles which do appear in Canadian papers tend to be either trashily popular and worthless, or so solemn and technical (not to mention ill-written and ungracious) that they repel the reader who has some pretensions to taste in the other arts. Before you can have good architectural criticism you must have some good writers on the subject, who may not themselves be first-rate architects. And such criticism, without being narrow or faddy, should not be afraid to hit hard. As an admirable Canadian critic in another line said to me recently, 'Without derision the people perish'.

Robertson Davies, Peterborough

Our architectural production has attained a level today which makes it worth being the subject of criticism. The time of self-adulation should long ago have elapsed and as a profession we should be able to meet the challenge of constructive criticism.

Action not substantiated by a philosophy or an ideal is doomed to fail, and this is what the architect's production amounts to, when not accompanied by thought or vivified by controversy.

The absence of a free and liberal use of the faculty of analysis and appraisal, one of the most conscious and civilized manifestations of the mind, constitute the worst form conformism and sheer impotence, to sum it up: hypocrisy.

The form of criticism is of a lesser importance. Whether it is used systematically or sporadically, whether it is confined to professional critics or sought from the "ranks", there is doomed to be a certain parti-pris, prejudice, school influence or other weaknesses inherent to the subject-matter. Likewise, the range of criticism should not be limited in regards to functionalism, structure or aesthetics. It should be broad in its scope, so as to comprise all aspects of the sphere of influence of architecture in the social, cultural, and human behaviour.

I feel very emphatically that the use of comments or articles of a critical nature in the *Journal* regarding architectural works, would have, even in this restricted form, a deeper and broader significance than being a mere incentive for the improvement of architectural design. It would be a tangible sign of maturity.

Edouard Fiset, Quebec

En peinture, comme en musique et en lettres, la critique existe et est même recherchée. Elle a pour but d'expliquer et d'apprécier l'oeuvre à son mérite, de confirmer ou d'infirmer le concept de l'auteur, tout en étant une source d'éducation pour le profane.

Comme l'architecture, aussi bien que les autres arts, malgré sa fin pratique et utilitaire, est une oeuvre de l'esprit dont la valeur varie suivant les qualifications et les dispositions de l'auteur, une critique architecturale saine, c'est-à-dire qui ne serait ni maligne ni sévère, mais courageuse et franche, contribuerait considérablement à réhausser la qualité de notre architecture.

Dans ce cas, le critique, sans être nécessairement architecte, devra avoir les connaissances et la formation suffisante pour juger du problème en face duquel l'auteur s'est trouvé et sa critique devra couvrir, non seulement l'expression extérieure, mais l'oeuvre dans son ensemble. Si l'édifice qui fait l'objet d'une critique ne peut être visité, une documentation complète, permettant une analyse sous tous les angles, s'avère indispensable pour faire valoir les aspects rationnels et fonctionnels qui s'y rattachent et que des photos extérieures seules ne peuvent fournir.

Lucien Mainguy, Quebec

Any field of human endeavour should benefit by criticism, providing the critic has some knowledge and appreciation of his subject. Critical articles published in the *Journal* should be by non-professionals, rather than by members of the profession. Architects, like music teachers, are far too sensitive to criticism from their own confrères.

The confidence of the public must be considered. No one has ever heard of one surgeon adversely criticizing another surgeon's efforts and results in a medical publication.

Criticism by youth tends to be intolerant of the old; seeing only good in the new, and lacking in experience, he often prefers new mediocrity because it is fashionable, rather than sounder design which may be more conservative.

To illustrate: Years ago (1929) a classical building designed by Dr Henry Sproatt was rather severely criticized by a then very young professor of architecture for its lack of "modern" design. Looking back from 1954 to 1929 most of us will agree (and I think the then-very-young-professor, too) that Canadian "modern" of 1929 was generally speaking execrable taste, while the classical building, even less "modern" now, is still good architecture. Conversely, I feel that Henry Sproatt, if living today, would be the first to acclaim good contemporary design.

To sum up, I think the Public and Time are the best critics of architectural design.

H. H. G. Moody, Winnipeg

Architecture is a matter of astonishing indifference to Canadians who inhabit it. They can't develop an intelligent interest because the subject is rarely discussed outside the fatuous pages of House Awful magazines. This is a vicious circle; no interest – no criticism; no criticism – no interest . . . and no critics. To break the circle we must have in the public forum lively informed lay criticisms analogous to the criticism of books, painting, music, drama. Such public criticism bristles with difficulties – the most obvious being that an innocent Owner's major investment may be prejudiced. The stand could be taken that for each Owner slightly affected and for each architect tumbled, future Owners may procure a better architecture guided to greater competence by constructive criticism. Such criticisms must be widespread – isolated criticism may tend to the invidious. Most important, the criticism of the architectural complex must be thorough, made on the spot and judged against the program, materials and economics of execution.

Second best to public review would be critical appraisal in the pages of this *Journal* – if we can't interest and educate our customers, surely in the privacy of our own pages we can mutually strengthen our work by consideration. Good examples of a positive critical approach – *The Architectural Review* (N.B. March, 1951, p. 135); *Progressive Architecture Design Critiques* wherein three or four relatively insensitive architects mutually appraise each others published work; example of a negative approach – *Journal* of the RAIC. With ideal criticism – great work is interpreted, mediocre work is strengthened, poor work is destroyed – and this is as it should be.

James A. Murray, Toronto

Yes. It would be a healthy thing for the whole profession, but doubly valuable if used as a "come-on" in a campaign to encourage criticism in the lay press. Let us give a lead to the public; at present indifferent and certainly voiceless.

But why not architects as well as architecture? Is the profession so strong, so highly regarded, so much master of its field that it can avoid self-searching? "What are we doing here, anyway?" "Where do we go from here?" These are good questions to ask ourselves and to keep on asking. What is the actual place of the architect in our society? Is his present mode of practice the most fruitful? What about his relations with clients? With governments? With engineers? The *Journal* is surely the place to grope for answers.

Criticism of architecture, rather than architects, can be generalized or applied to a particular building. Only the latter presents real problems. That nasty word "libel" plagues editors (but might not the *Journal* be privileged?). The legal gimmick that seems to discourage architectural criticism in the lay press, where music, the drama and so-called Fine Arts are given a frequent going-over, lies in the fact that no one is ever specifically invited to criticize buildings; no one is sent free tickets, so to speak. This gimmick needs turning inside out. The public has legal remedy for nuisances to ear and nose, but anyone

with the money to build can not only affront the public eye for a hundred years, but can also sue for damages if, for instance, a well-deserved adverse criticism of an apartment house could be shown to have turned away prospective tenants. Could we not sponsor laws establishing a right to public criticism of any building in the public view?

Lay critics with the right equipment are hard to find. Initially, architects will have to do the job, but criticism of the work of colleagues is usually thought to be a delicate and touchy business. But why? Novelists and musicians frequently criticize each other's work in the press, and over their own names. There need be no connotation of rivalry or superiority; no suggestion that "I could do it better." Let's remember the old adage which protects the position of the critic: "I don't have to be able to lay an egg to tell you whether it's good or bad!" But if the chaps are squeamish, why not use pseudonyms? If a reasoned evaluation is convincing, is it really important to know who wrote it?

Lastly, let criticism be largely aesthetic. It's the appearance of a building that the public has to put up with. Just look out of your window – and wince.

Hazen Sise, Montreal

O CANADA

A petrified forest

BOOK REVIEW

PLANNING RESIDENTIAL SUBDIVISIONS by V. Joseph Kostka. The book contains 127 pages and 33 illustrations, mostly full-page size. Cover design. Bibliography. Size 6¾ by 8½ inches. Obtainable from the School of Architecture, The University of Manitoba, Winnipeg, Manitoba. Price $3.50.

In writing on such an impersonal and dispassionate subject as "Planning Residential Subdivisions" it is surprising how many facets of one's personality can be displayed.

The author has so thoroughly reviewed the multiple aspects of his chosen subject, and with such a sense of responsibility that I am tempted to apply to his essay the word courageous. It is, in fact, a "frontal attack" on the subject.

Professor Kostka makes an exposé and a critical analysis of all operations necessary, or recommended, to achieve a proper residential development from the embryo of the speculator's speculation on the possibility of undertaking the operation, to the very last refinement of the painter's brush and the push of the landscape architect's green thumb. Not an item is forgotten or minimized, and, surprisingly enough, points of view of all parties that are concerned in the development of land are clearly described or implied.

The broadness of the treatment of the subject matter is not completely exemplified by the titles of the chapters which give us only a general idea, i.e., the community planning aspect; the engineering aspect; the landscaping aspect; the architectural aspect; the professional services. For instance, ten pages are devoted to zoning under the first heading and represent a most concise and complete review of this intricate problem as applied to residential subdivisions.

Above all, may I say what has hit a soft spot in this reader's heart is the place left to aesthetic values. These are simply and strongly presented by the author in his underlying theme. Expressions such as: "limitless possibilities of wedding nature to art", or, "the functional and aesthetic aspects like two sides of a coin are at once complementary and inseparable" are to be remembered. These points are well demonstrated by a few ink illustrations by the author. It is heartening to see that a person with such a sense of these values can discuss as well the engineering or "practical" questions, and matters relevant to economics, sociology or administration. It is equally comforting to see the problem not reduced solely to a matter of welfare or return of invested capital. These aspects are given their proper importance which is still great, but the fact that the "language" of town planning is the material expression of an environment, and that it will, finally, be known and "lived in" as such, is here forcefully and convincingly demonstrated and appraised.

Those who know the author personally will agree that his modesty would have prevented him from investigating further the ways and means to realize some of the harmonious examples that he offers in opposition to certain accepted unimaginative practices. These examples presuppose a higher degree of control than can usually be exercised, and might have led the author to a further investigation in the domains of political structures or considerations on the rights of individual property. Dr Kostka does not pretend to give all the answers to all the questions arising from the development of land, the control on the free disposition of property or the individual responsibilities towards the community, but he has endeavoured – and well succeeded – in solving a given problem with a clear and complete understanding of all its aspects.

As John A. Russell, Director of the School of Architecture, University of Manitoba, says in his enlightened foreword: "This book should prove invaluable to all those who deal, either in theory or practice, with residential subdivisions."

Edouard Fiset